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effective in starting people to think about it, but can never suffice to show what policy should be adopted. To demonstrate what ought to be done is one thing; but to show how to do it is, as all practical men know, a very different and generally a much more difficult thing. We hope, therefore, that if our naval friends, for whose professional ability *Science* entertains the highest respect, really desire the transfer, they will present such a detailed plan of proceeding from beginning to end, that every one shall be able to understand and criticise it. Until they do this, they must not expect to excite congress to action.

We may add one general consideration. A considerable number of naval officers are actually engaged in coast-survey work. Is not their work as effectively performed under the present system as it would be if the navy department had charge of it? What would the officers themselves, or the navy at large, gain by the transfer? We are aware that Secretary Chandler considered it a very great hardship that officers should be removed from the immediate control of the department to which they belong. But where does the real evil come in? These questions must be answered, and the public benefit to be gained by the change must be made clear, before the project can receive the really effective support of scientific men. The latter are not disposed to prejudge the question, but before supporting the measure they want to be satisfied of its practical advisability; and this can be done only by the advocates of the change fully considering such questions as those above suggested.

COMPOSITE PORTRAITS OF AMERICAN INDIANS.

On the plate accompanying this number is given, so far as known, the first presentation of composite portraits taken of North American Indians.

No. 1 is of three full-blood Dakota or Sioux young women belonging to the band commonly known as the Brulé, and living at the Crow Creek agency, Dakota territory. Their ages range from nineteen to twenty-three years. Their average height is five feet six inches and a half; their average weight, a hundred and forty-one pounds. This composite is made from photographs taken on the same day and in rapid succession. On the same afternoon, composite No. 2 was taken from the same persons, each one sitting her allotted seconds before the camera. In No. 1 and No. 2 the order of the faces is identical, and care was exercised to try and procure similar results in

the portrait; but, as will be observed, the composites are different. The controlling face in No. 1 is given in picture No. 3, which was the first photograph to be exposed in making up composite No. 1. The dominant face in No. 2 is given in picture No. 4. It belonged to the last sitter, and her photograph was the last one exposed in making composite No. 1. In two composites similarly made, of Omaha women, the one from sitters varies in a like manner from the one made up from photographs, only in a different order. In the one from life the broad face of the last sitter controls the composite, and in the other the long face of the first photograph influences the picture. This variation of composites made from the same faces—one taken from life, the other from photographs—is mentioned for what it may be worth.

A composite of Omaha men, a cognate tribe, differs but little from a Dakota composite, except in the eyes. In the Omaha composite the eyes are larger and fuller. The height and breadth of head, the strong but not unduly heavy lower face, are noticeable in both Omahas and Dakotas. A composite of Omaha women does not differ in any marked manner from the Dakota portrait. In both the pictures of the women, there is to be observed a similar variation between the female and the male of the same tribe, notably in the shape of the head, and the greater prominence, proportionally, of the cheek-bones in the women's faces.

It is premature to judge of the value of composite portraits. They are certainly curious and interesting, and many points will occur to the observer of these Indian faces. In a general way, they seem to confirm the results of a close study of the home-life and the various customs, including the most savage rites of war and religion, made by the writer among this family of Indian tribes, by showing them to be a people, intellectual rather than brutal, unawakened rather than degraded. The portraits indicate the stamp of tribal fixity, and reveal the unconsciousness within the individual of the analytical powers of mind by which man masters nature, — a peculiarity which is the key to much in Indian sociology and religion.

The writer is indebted to Mr. Jenness Richardson of Washington, D.C., for the making of the composites.

ALICE C. FLETCHER.

GEOGRAPHICAL NOTES.

Siberian trade-routes. — The practical failure of the route by sea has stimulated the search for routes of inland communication between Russia and Siberia. The latest investigations are those be-

tween the Petchora and the Obi, under the auspices of Sibiriaoff and others, through the northern Urals. There are, it appears, several passes, the best probably that of Shokurinsk. This is ninety-eight miles long, and extends from Kurga on the Petchora, a town accessible by steamers, to the Sigva River, an affluent of the Sosva of the Obi basin. The pass is only 1,450 feet above the level of the sea, and 1,150 above the Sigva. A railway a hundred miles long will therefore connect these two great water systems, and avoid all the perils of arctic navigation in the Kara Sea and Gulf of Obi. Another pass, the Voikarski, is of about the same length, but rises two hundred feet higher.

Partition of Patagonia. — Patagonia has disappeared from political geography. The *Panama Star and herald* announces the result of the agreement, in regard to this region, by Chili and the Argentine Republic, who have absorbed it. To Chili has been assigned all the western slope of the Cordillera to the southern extreme of the continent, to the Strait of Magellan, and all the islands off that coast. The eastern slope of the range, and the vast pampas extending to the Atlantic, are now the property of the Argentine Confederation. The Strait of Magellan is declared neutral, and free to all nations. The chief island of Tierra del Fuego is parted equally between the two nations, Chili taking all the other islands, including that of Cape Horn.

Miscellaneous. — It is announced that news has been received from Ghardaia, in the Sahara, of the assassination of Lieutenant Palat the explorer. He was murdered by his Mohammedan guides two days after leaving Insalah. It is alleged that his death was due to the Senousian fraternity, the fanatical association, whose members were the assassins of Colonel Flatter's party in the same region, and are held responsible for the death of numerous other explorers. Baron Kaulbars, after nine years' labor, has finished a new chart of South America. It is published by Ilin of St. Petersburg, in eight sheets, and on a scale of 1 : 6,300,000. The author is now engaged on a chart of Africa, to have the same scale. It is said, that, after the fixing of the frontier line by the Russo-English commission, many of the Turkomans living on the fertile slopes of the Afghan mountains have moved to the Russian side of the line. As the country on this side is a desert, it is supposed that they cherish the idea that they will hereafter have an opportunity of raiding the Afghan settlements from Russian territory, — a course which would be likely, if not energetically repressed by Russia, to raise anew many international complications. Lieutenants Ryder and Bloch of the Danish navy will devote this summer

to hydrographic explorations in the district of Upernavik, Danish Greenland.

PARIS LETTER.

SINCE my last letter, a good deal of stir has been created in some circles by the death of three of the Russians sent to Pasteur, after having been bitten by a mad wolf. As is always the case, some persons cannot believe in methods that are liable to miss fire now and then : they think that medicine and physiology ought to be as precise and unvarying as mathematics ; they cannot understand that he who operates on living matter, operates on the most moving and varying of all grounds. No person of scientific training will wonder if Pasteur does not always meet with success : in fact, the experiment has only just begun, and we shall have to wait some time before a legitimate conclusion may be reached. I do not suppose that the fiery attacks of Rochefort, the renowned — and sadly renowned — pamphleteer, on Pasteur's experiments, are even able to attract the great experimenter's attention. They are good enough to amuse a few, but that is all.

However, as many newspapers have seemed rather dismayed by the death of the three Russians, and as some persons have seemed to be shaken in their confidence, M. Pasteur has deemed it advisable, at the meeting of the Academy of sciences, on the 12th of April, to give his opinion on the question. In his last paper, then, he begins by recapitulating the whole number of persons attended to by himself. At present this number is 688, of which more than half have outlived the more dangerous period, — that during which rabies is most likely to develop. Turning then to the question of the great danger of rabies communicated by wolves, he quotes many documents referring to the same, showing that recovery is very rarely met with. In Russia it is generally considered that persons bitten by rabid wolves have no chance of escaping their fate ; and it must be noticed, as M. Pasteur remarks, that in such cases the duration of the period of incubation is remarkably short. But the fatal effects of the wolf's bite is not due, according to Pasteur, to any increase of rabid virulence in the wolf. The virus is not, or at least does not seem to be, any stronger in the wolf than in the dog ; but as the wolf usually inflicts very severe bites, especially on the face and hands, the virus penetrates the body with much more ease. Such is, in Pasteur's opinion, the reason of the seriousness of rabies communicated by wolves. This opinion has led him to alter somewhat his method in cases where rabies is of wolfish origin : he is to tell us some day how he has altered it, and with what success.